SESSION – 2020-2021
DEPARTMENT OF BOTANY
GOVT. V.Y.T. PG. AUTONOMOUS COLLEGE DURG

Outcome of the UG Program

- To provide thorough knowledge about various plant groups from primitive to highly evolved. To make the students aware about conservation and sustainable use of plants.
- To address the socio-economical challenges related to plant sciences.
- To facilitate students for taking up and shaping a successful career in Botany.
- To prepare for competitive exams conducted by service commission like UPSC, PSC, IFS etc
- To create foundation for further studies in Botany.

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DEPARTMENT OF BOTANY
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Approved syllabus for B.Sc. Botany (I, II & III year) by the members of Board of Studies for the Session 2020-2021
The syllabus with the paper combinations is as under

B.Sc. Part-I:

Course Code- BBO 01 **Paper I:** Bacteria, Viruses, Fungi Lichen and Algae	**Course Code- BBO 02** **Paper II:** Bryophytes, Pteridophytes, Gymnosperms and Palaeobotany
Lab Course I – based on paper I &II	

B. Sc. Part -II:

Course Code- BBO 03 **Paper I:** Plant Taxonomy, Economic Botany, Plant Anatomy andEmbryology	**Course Code- BBO 04** **Paper II:** Ecology and Plant Physiology
Lab Course I - based on paper I &II	

B.Sc. Part- III:

Course Code- BBO 05 **Paper I:** Plant physiology, biochemistry and biotechnology	**Course Code- BBO 06** **Paper II:** Ecology and utilization of plant
Lab Course I - based on paper I &II	

The syllabus for B.Sc. Botany (I,II& III year) is hereby approved for the session 2020-2021

(In case, any change or modification is prescribed by Central Board of Studies or Higher Education Deptt., Govt. of Chhattisgarh with respect to content or distribution of marks for Undergraduate syllabi, it will be implemented accordingly.)

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1.	Chairperson	**Dr. Ranjana Shrivastava**	
2.	Members	1. Prof. Smt. Gayatri Pandey	
		2. Dr. K. I. Toppo	
		3. Dr. G. S. Thakur	
		4. Dr. Shriram Kunjam	
		5. Dr. Satish Kumar Sen	
		6. Dr. Vijay Laxmi Naidu	
3.	Subject specialist	1. **Dr. J.N. Verma**(Govt. D.B. Girls PG College, Raipur C.G.)	
		2.**Dr. N.B. Singh** (Govt. N.PG. Science College Raipur C.G.)	
4.	VC Nominated member	**Dr.Usha Chandel** (Govt. W.W. Patankar Girls College Durg C.G.)	
5.	Corporate/ Industrial area Representative	Shri Rajesh Agarwal (Kusum Rice Mill Kadambari Nagar Dhamdha Road Durg C.G.)	
6.	Ex Meritorious Student PG	Ratnakar Upadhyay	
7.	Subject expert from other Department	Dr. Anil Shrivastava, Department of Zoology, Govt. V.Y.T.PG. Autonomous College Durg C.G.)	

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Syllabus and Marking Scheme for B.Sc. Part I
Session 2020-2021

Paper No.	Title of the Paper	Marks Allotted in Theory	
		Max	Min
I **Course Code- BBO 01**	Bacteria, Viruses, Fungi Lichen and Algae	50	17
II **Course Code- BBO 02**	Bryophytes, Pteridophytes, Gymnosperms and Palaeobotany	50	17
III	Lab course/ Practical	50	17
	Total	**150**	

02. Theory papers - 100
01. Practical - 50
Total Marks - 150

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GOVT. V.Y.T. PG. AUTONOMOUS COLLEGE DURG

B.Sc. -I (BOTANY)
SESSION:2020-2021
PAPER -I (Course Code- BBO01)
BACTERIA, VIRUSES, FUNGI, LICHENS AND ALGAE

UNIT -I

VIRUSES: General characteristics, types of viruses based on structure and genetic material. Multiplication of viruses(General account), Lytic and Lysogenic cycle.Economic importance. Structure and multiplication of Bacteriophages. General account of Viroids, Virusoids, Prions, and Cyanophages.Mycorrhiza-Types and Significance.

UNIT –II

BACTERIA: General characteristics and classification (on the basis of morphology), fine structure of bacterial cell, Gram positive and Gram negative bacteria, mode of nutrition and reproduction vegetative, asexual and recombination (Conjugation, transformation and transduction), Economic importance. Microbial Biotechnology, Rhizobium, Azatobactor, Anabena.

UNIT-III

FUNGI: General account of habit and habitat, structure (range of thallus organization), cell wall composition, nutrition and reproduction in fungi. Heterothallism and Parasexuality. Outlines of classification of fungi. Economic importance of fungi. Life cycles of Saprolegnia, Albugo, Aspergillus, Peziza, Agaricus, Ustilago, Puccinia, Alternaria and Cercospora. VAM Fungi

UNIT-IV

ALGAE: Algae: General characters, range of thallus organization, Gaidukov phenomenon, reproduction, life cycle patterns and economic importance.Classification, Systematic position, occurrence, structure and life cycle of following genera:Nostoc, Gloeocaspsa,Volvox,,Oedogonium, Vaucheria, Chara, Ectocarpus, Polysiphonia.

UNIT–V

Lichens-General account, types, structure, nutrition, reproduction and economic importance.Mycoplasma: Structure and importance.Blue Green Algae (BGA) in nitrogen economy of soil andreclamation of Ushar land. Mushroom Biotechnology

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Books Recommended:

Dubey R.C. and Maheshwari D.K. A text book of Microbiology,S. Chand Publishing, New Delhi

Presscott, L. Harley, J.and Klein, D. Microbiology, 7th edition, Tata Mc Graw-Hill Co.New Delhi

Sharma P.D., Microbiology and Plant pathology,Rastogi Publication. New Delhi.

Alexopolous, C.J. Mims, C.W. and Blackwell, MM.Introduction to Mycology,John Wiley & Sons.

Dubey H.C. An Introduction to Fungi,Vikas Publishing, New Delhi

Mehrotra R.S. & Agrawal A., Plant Pathology,Tata McGraw, New Delhi

Sharma P.D. Plant Pathology, Rastogi Publishers, Meruth.

Srivastava, H.N. Fungi, Pradeep Publications, Jalandhar

Webster, J. & Weber, R.Introduction to Fungi,Cambridge University Press, Cambridge

Kumar H.D.Introduction to Phycology ,Aff. East-west Press, New Delhi

Lee RE,Phycology, Cambridge University Press U.K.

Srivastava, H.N., Algae, Pradeep Publications, Jalandhar

Pandey S.K. Quick Concept of Botany, Lambert Academic publishing, Germany

Pandey S.N., Mishra S,P.& Trivedi P.S.A Text Book of Botany (Vol.-I), Vikas Publishing, New Delhi

Singh, Pandey and Jain, A Text book of Botany,Rastogi Publication, Meerut.

Course Outcome

- To Learn classification, characteristics, nature life cycle about viruses.
- To Know about Mycorrhiza – types, occurrence and VAM association,
- To know about various plant diseases, causative agents, symptoms and their control measures.
- To understand life cycles of different fungal& algal species.
- To explore economic importance of fungi , algae & lichens
- To gain knowledge the structure, pigmentation, food reserves and methods of reproduction of Algae.
- To Learn the characteristics, identification and cultural methods of Rhizobium, Azotobacter and Anabaena.
- To have the ability to utilize the concept of mushroom cultivation.

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Question Paper Format and Distribution of Marks for Under Graduate Examination

1. The question paper for UG Classes is to be divided into three Sections - A, B & C.
2. Section A shall contain very short answer type questions (answer in one or two sentences) or objective type questions. (No Multiple choice questions. No 'fill in the blank' type Questions)
3. Section B shall contain short answer type questions with the limit of 150 words.
4. Section C shall contain long answer/descriptive type questions. The students are required to answer precisely and the answer should not exceed the limit of 350 words.

The scheme of marks should be as follows :

Question Type	MM 50 (Marks x No. of Questions)
A (Very short Answer)	**1x10 = 10**
B (Short Answer)	**3x5 = 15**
C (Long Answer)	**5x5 = 25**

The half yearly internal examinations will be held. 10% out of marks obtained by the students in each paper in internal examinations will be added to 90% of marks obtained in each paper of annual examination.

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GOVT. V.Y.T. PG. AUTONOMOUS COLLEGE DURG
B.Sc. -I (BOTANY)
SESSION: 2020-2021

PAPER–II (Course Code- BBO02)
(BRYOPHYTES,PTERIDOPHYTES, GYMNOSPERMS ANDPALAEOBOTANY)

UNIT–I

BRYOPHYTA:General characteristics, affinities, range of thallus organization, generalclassification and economic & ecological importance, Systematic position, occurrence,morphology anatomy and reproductive structure in Riccia, Marchantia, Pellia, Anthoceros, Funaria.Vegetative reproduction in Bryophytes, Evolution of sporophytes.

UNIT-II

PTERIDOPHYTES: General characteristics, affinities, economic importance and classification,Heterospory and seed habit, stellar system in Pteridophytes, Apospory and apogamy, Telome theory, Azolla as Biofertilizer.

UNIT-III

Systematic position, occurrence. Morphology, anatomy and reproductive structure of Psilotum,Lycopodium, selaginella, Equisetum, Marsilea.

UNIT-IV

Gymnosperm: General characteristics, affinities, economic importance and classification, Morphology, anatomy and reproduction inCycas, PinusandEphedra.

UNIT-V

PALAEOBOTANY: Geological time scale, types of fossils and fossilization, Rhynia, study of some fossil gymnosperms. Lygenopteris

Books Recommended:

Parihar, N.S.The Biology and Morphology of Pteridophytes,Central Book Depot, Allahabad.

Parihar,N.S.An introduction to Bryophyta Vol.I: BryophytesCentral Book Depot, Allahabad.

Sambamurty,AVSS,A textbook of Bryophytes, Pteridophytes, Gymnosperms andPalaeobotany, IK International Publishers.

Pandey SN, Mishra SP and Trivedi PS A text Book of Botany (Vol.II), Vikas Publishing, New Delhi

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Bhatanagar, SP and Moitra, A.Gymnosperm, New Age International (P) Ltd., Publishers, New Delhi

Biswas C. and Johri BM,The Gymnosperms, Springer-Verlag, Germany.

Srivastava, HN,Palaeobotany, Pradeep Publications Jalandhar

Srivastava, HN, Bryophyta, Pradeep Publications Jalandhar

Singh, Pandey and Jain, A Text Book of Botany, Rastogi Publication, Meerut

Sristava, HN,Fundamentals of Pteridophytes, Pradeep Publications, Jalandhar

COURSE OUTCOME

- Student will able to understand the evolutionary trends of bryophyta, pteridophyta and gymnosperms.
- They will get knowledge about habitats, structure and life cycle of the different members of the plant groups of bryophyta, pteridophyta and gymnosperms.
- They will get knowledge about economic importance of bryophyta, pteridophyta and gymnosperms. Also, they will know about Azolla as a biofertilizer.
- They will able to understand about geological time scale and fossil plants.

B.Sc. I (BOTANY)
PRACTICAL

Study of external (Morphorgical) and internal (microscopic/anatomical) features of representative genera given in the theory.

1. **Algae:** *Gloeocapsa, Scytonema, Gloeotrichia, Volvox, Oedogonium, Vaucheria, Chara, Ectocarpus, Sargassum, Batrachospermum*

2.Gram staining

3.**Fungi**: Albugo, *Aspergillus, Peziza, Agaricus, Puccinia, Alternaria and Cercospora*

4.**Bryophyta**: *Riccia, Marchantia, Pellia, Anthoceros, Sphagnum, Funaria*

5.**Pteridophyta**: Lycopodium, Selaginella, Equisetum, Marsilea.

6.**Gymnosperm**: *Cycas, Pinus, Epherda.*

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PRACTICAL SCHEME

TIME: 4 Hrs.	**M.M. : 50**
1. Algae/Fungi/Gram Staining	10
2. Bryophyta/Pteridophyta	10
3. Gymnosperm	10
4. Spotting	10
5. Viva-Voce	05
6. Sessional	05

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